



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Centennial Challenges Vascular Tissue Challenge

AGENCY: National Aeronautics and Space Administration (NASA)

NOTICE: (16-041)

ACTION: Notice

SUMMARY: This notice is issued in accordance with 51 U.S.C. 20144(c). The Vascular Tissue Challenge is open and teams that wish to compete may now register. Centennial Challenges is a program of prize competitions to stimulate innovation in technologies of interest and value to NASA and the nation. The Vascular Tissue Challenge is a prize competition with a \$500,000 prize purse for teams that can successfully create thick, human vascularized organ tissue in an *in vitro* environment while maintaining metabolic functionality similar to their *in vivo* functionality throughout a 30-day survival period. NASA is providing the prize purse. The Methuselah Foundation's New Organ Alliance is the Allied Organization managing the competition.

DATES: This is a "first to demonstrate" competition. Teams may submit their intent to compete beginning June 13, 2016 and the competition will remain open until the requirements of the rules are met and a winner is announced or until the Challenge Deadline of September 30th, 2019.

ADDRESSES: The Vascular Tissue Challenge will be conducted and judged at the laboratory facilities of the participants.

FOR FURTHER INFORMATION:

To register for or get additional information regarding the Vascular Tissue Challenge, please visit:

<https://www.neworgan.org/vtc-prize.php>

For general information on the NASA Centennial Challenges Program please visit:

<http://www.nasa.gov/challenges>. General questions and comments regarding the program should be addressed to Monsi Roman, Centennial Challenges Program, NASA Marshall Space Flight Center Huntsville, AL 35812. Email address: hq-stmd-centennialchallenges@mail.nasa.gov.

SUPPLEMENTARY INFORMATION:

Summary

Competitors will be asked to produce an in-vitro vascularized tissue that is ≥ 1 centimeter in thickness in all dimensions at the launch of the trial and maintains $\geq 85\%$ survival of the required parenchymal cells throughout a 30-day period. Tissues must provide adequate blood perfusion without uncontrolled leakage into the bulk tissue to maintain metabolic functionality similar to their in-vivo native cells. Histological measurement of the quality and amount of functional performance will be required to determine survival of parenchymal tissue. Teams must demonstrate 3 successful trials with at least a 75% trial success rate to win an award. In addition to the in-vitro trials, teams must also submit a Spaceflight Experiment Concept that details how they would further advance some aspect of their tissue vascularization research through a microgravity experiment that could be conducted in the U.S. National Laboratory (ISS-NL) onboard the International Space Station.

I. Prize Amounts

The total Vascular Tissue Challenge prize purse is \$500,000 (five hundred thousand U.S. dollars). First place will receive \$300,000 (three hundred thousand U.S. dollars). Two runners-up may be awarded \$100,000 (one hundred thousand U.S. dollars) each. Entries must meet specific requirements detailed in the Rules to be eligible for prize awards.

II. Eligibility

To be eligible to win a prize, competitors must;

- 1) Register and comply with all requirements in the rules and Team Agreement;
- 2) In the case of a private entity, shall be incorporated in and maintain a primary place of business in the United States, and in the case of an individual, whether participating singly or in a group, shall be a citizen or permanent resident of the United States; and
- 3) Not be a Federal entity or Federal employee acting within the scope of their employment.

III. Rules

The complete rules for the Vascular Tissue Challenge can be found at:

<https://www.neworgan.org/vtc-prize.php>.

Cheryl Parker

NASA Federal Register Liaison Officer

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